IS 10351 (1982): Spools for 25.4 mm Video Magnetic Tape
[LITD 7: Audio, Video and Multimedia Systems and Equipment]

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Indian Standard

SPECIFICATION FOR SPOOLS FOR 25·4 mm VIDEO MAGNETIC TAPE

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SPECIFICATION FOR SPOOLS FOR 25·4 mm VIDEO MAGNETIC TAPE

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Indian Standard

SPECIFICATION FOR SPOOLS FOR 25·4 mm VIDEO MAGNETIC TAPE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 21 October 1982, after the draft finalized by the Recording Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

0.2 This standard covers the requirements of spools for 25·4 mm video magnetic tape.

0.3 While preparing this standard assistance has been derived from the following documents:

IEC Pub 503-1975 Spools for 1 in (25·4 mm) video magnetic tape, issued by the International Electrotechnical Commission.

ISO 1860 Information processing — Precision reels for magnetic tape used in interchange instrumentation applications issued, by the International Organization for Standardization.

ISO 1858 Information processing — General purpose hubs and reels with 76 mm (3 in) centre hole, for magnetic tape used in interchange instrumentation applications, issued by the International Organization for Standardization.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard specifies the types of spools to be used on video tape recorders using 25·4 mm tape. It refers to professional tape recorders for broadcast or non-broadcast use.

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*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the terms and definitions given in IS : 1885 (Part XLVIII/Sec 1)-1978* shall apply.

3. GENERAL REQUIREMENTS

3.1 Material — All spools shall be manufactured from materials of corrosion resistant type or shall be treated to resist corrosion.

3.2 Construction and Workmanship — All spools shall be manufactured in a thoroughly workmanlike manner and in accordance with good engineering practice.

3.3 Spools shall be so constructed that any profile section taken through the centre axis of the reel falls within the cross-hatched envelope of the figure; this includes lateral run-out of the flanges.

3.4 Bosses, ribs, or raised designs may be present on the outside surfaces of the flanges provided they do not extend beyond the cross-hatched envelope (*see* Fig. 1, 2 and 3) when the reel is rotated around its centre axis.

3.5 Flanges may have holes of convenient size, shape and location to facilitate threading of the tape.

3.6 Spools shall be symmetrical to permit mounting from either side.

4. DIMENSIONAL REQUIREMENTS

4.1 Spools for Professional Broadcast Use

4.1.1 The dimensions of the spools shall be as specified in Fig. 1 and Tables 1 and 2.

4.1.1.1 For measurement purposes, dimensions are referred to a reference plane (*see* Fig. 1) which coincides with the mounting surface of the reel. Spools shall be symmetrical to permit mounting from either side, and the specified dimensions shall be achieved with each mounting surface taken in turn as the reference plane.

4.1.2 The surface of the two flanges, considered between diameters L and B, shall lie between the planes defined respectively by dimensions H_1 and J_1 for the flange closest to the reference plane, and between H_2 and J_2 for the other flange.

*Electrotechnical vocabulary: Part XLVIII Recording, Section 1 Tape recording [Superseding IS : 1885 (Part III/Sec 3)-1967].

TABLE 1 DIMENSIONS OF SPOOLS FOR PROFESSIONAL BROADCAST USE

(*Clause* 4.1.1)

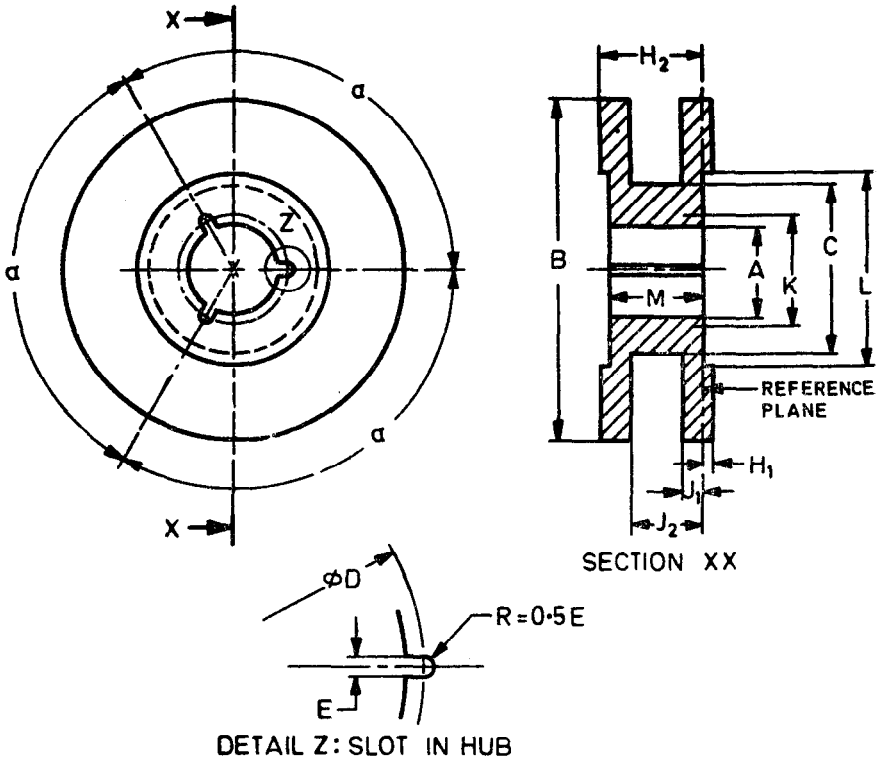
DIMENSION	mm		ANGULAR DEGREES	
	Max	*Min*	*Max*	*Min*
A	76·3	76·2		
B	*See* Table 2			
*C**	114·6	114·0		
D	82·6	82·5		
E	5·72	5·56		
H_1	0·64			
J_1	2·50			
H_2	31·50			
J_2		28·21		
K		91·5		
L		152·4		
M	30·86	30·71	120·1	119·9
α				

*Exclusive of friction rings.

TABLE 2 PREFERRED FLANGE DIAMETERS

(*Clause* 4.1.1 and Table 1)

DIMENSION *B* mm
$203^{+0·5}_{-0·1}$
$229^{+0}_{-0·6}$
$248^{+0}_{-0·6}$
$267^{0}_{-0·6}$
$318^{+0}_{-0·6}$
$356^{0}_{-0·7}$



NOTE — Dimensions J_1, H_1, J_2 and H_2 define the envelope within which the flanges shall lie and do not define the thickness of the flanges.

FIG. 1 SPOOLS FOR PROFESSIONAL BROADCAST USE

4.1.3 Between diameters *A* and *L* the outside surfaces of the spool including any flange fastening device employed, shall not extend beyond the surfaces defined by dimension *M* (*see* Fig. 1).

4.1.4 The hub surfaces defined by dimensions *M* and *K* shall be parallel within 0·000 4 mm per millimetre. The hub surface defined by diameter *C* shall be square to the reference plane within 0·001 5 mm per millimetre.

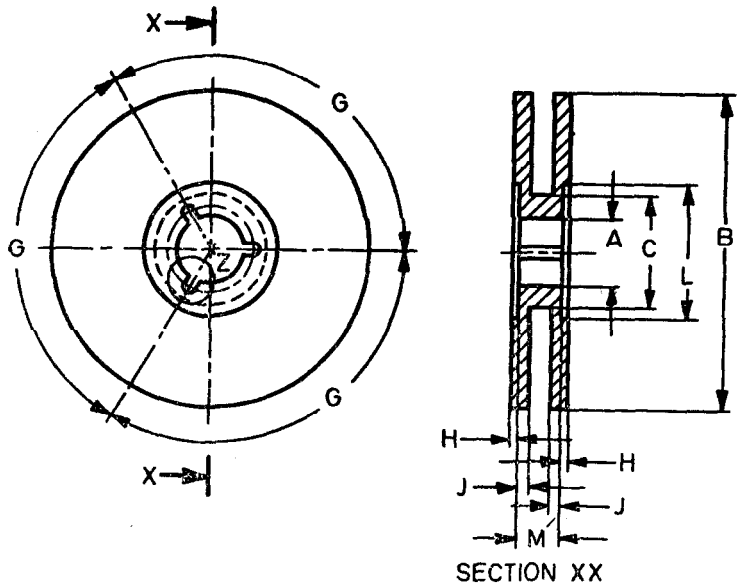
4.1.5 The inside cylindrical surface of the centre hole (diameter *A*) shall be coaxial with the outside cylindrical surface of the hub (diameter *C*) with 0·05 mm TIR; that is the deviation of the centre of diameter *A* with respect to the centre of diameter *C* shall not exceed 0·025 mm.

4.1.6 The outside diameter of the flanges (diameter *B*) shall be coaxial with the centre hole of the hub (diameter *A*) within 0·4 mm TIR; that is the deviation of the centre of diameter *B* with respect to the centre of diameter *A* shall not exceed 0·2 mm.

4.1.7 The maximum taper (change of radius) of the outside cylindrical surface of the hub measured over the length included between the inner surfaces of the flanges shall be 0·02 mm.

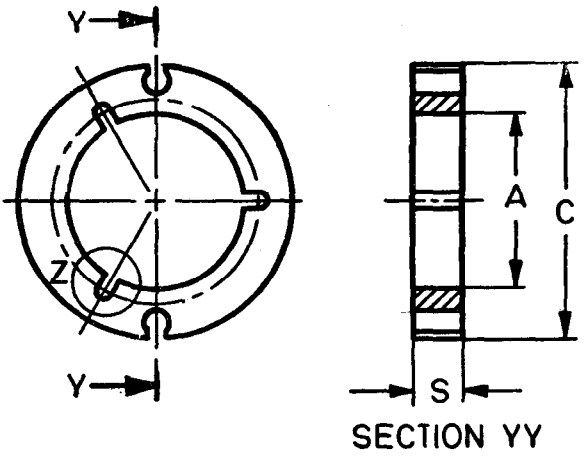
4.2 Spools for Professional Non-broadcast Use

4.2.1 The dimensions of the spools shall be as specified in Fig. 2 and 3 and Tabes 3 and 4.



NOTE — For detail Z, *see* Fig. 1.

FIG. 2 SPOOL FOR PROFESSIONAL NON-BROADCAST USE



NOTE — Optional threading slots (two) Maximum opening at hub outside diameter : 1·65 mm.
— For detail Z, *see* Fig. 1.

FIG. 3 HUB FOR PROFESSIONAL NON-BROADCAST USE

TABLE 3 DIMENSIONS OF SPOOLS FOR PROFESSIONAL NON-BROADCAST USE

(*Clause* 4.2.1)

DIMENSION	mm		ANGULAR DEGREES	
	Max	*Min*	*Max*	*Min*
A	76·4	76·2		
B	*See* Table 4			
*C**	114·6	114·0		
D	82·8	82·5		
E	5·8	5·6		
G			120·25	119·75
H	1·3			
J	2·0			
L		115		
M	31·3	30·3		
S	28·05	27·75		
Taper of outside cylindrical surface of hub†	0·08			

*Exclusive of friction rings.
†Taper equals the permissible variation of diameter *C* from one side of the hub to the other, irrespective of the limits of the size.

TABLE 4 PREFERRED FLANGE DIAMETERS

(*Clause* 4.2.1 and Table 3)

DIMENSION *B* mm
$203\ ^{+0}_{-0{\cdot}6}$
$229\ ^{+0}_{-0{\cdot}6}$
$248\ ^{+0}_{-0{\cdot}6}$
$267\ ^{0}_{-1}$
$318\ ^{+0}_{-0{\cdot}6}$
$356\ ^{0}_{-1}$

*ISIDG NOTE — Specific comments are invited on the tolerances of these dimensions.

4.2.2 The surfaces of the flanges between diameters *L* and *B* shall lie between the planes defined by dimensions *H* and *J* (*see* Fig. 2).

4.2.3 Between diameters *A* and *L*, the outside surfaces of the reel, including any flange fastening devices employed, shall not extend beyond the surfaces defined by dimension *M* (*see* Fig. 2).

4.2.4 The reel surfaces defined by dimension *M*, or the hub surfaces defined by dimensions *S* (*see* Fig. 3), shall be parallel within 0·002 5 mm per millimetre of diameter.

4.2.5 The outside cylindrical surface of the hub (diameter *C*) shall be concentric with the centre hole (diameter *A*) within 0·25 mm TIR, that is the deviation of the centre of diameter *C* with respect to the centre of diameter *A* shall not exceed 0·125 mm.

4.2.6 The outside diameter of the flanges (diameter *B*) shall be concentric with the centre hole of the hub (diameter *A*) within 1·3 mm TIR, that is the deviation of the centre of the diameter *B* with respect to the centre of diameter *A* shall not exceed 0·65 mm.